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MEDICAL NEWS LETTER

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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objective stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund
Bureau of Medicine and Surgery (Code 14)
Department of the Navy
Washington 25, D. C.

Committee

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Physiology of the Juxtaglomerular Cells

The juxtaglomerular cells (JG cells) in the kidney were first described by Ruyter in 1925, and were studied extensively by Goormaghtigh 20 years ago. They have remained in relative medical obscurity, however, mainly because they cannot readily be seen in the usual histologic preparations. The cells have all the appearances of secretory cells with secretory granules in their cytoplasm. They are found in all mammals including man. Actually, they lie in the wall of the afferent arteriole, particularly in the part quite near the glomerulus.

Utilizing a recently developed stain, it has been possible to determine that certain physiologic states produce a hypergranularity of the JG cells, while other conditions are associated with a complete disappearance of the cytoplasmic granules. An index has been described which gives a semi-quantitative estimate of the degree of granularity of the JG cells.

Because the JG cells are actually in the wall of the afferent arteriole, they are in a perfect anatomic position to appreciate changes in the stretch of the arteriolar wall. Many observations support the notion that they act as stretch receptors, such response being apparent on obstructing the renal artery in rats. Observations have made it appear that degranulation of the JG cells occurs when the pressure in the renal arterial system becomes elevated.

The JG cells also respond to variations in the amount of mineralocorticoids in the body, as well as to varying amounts of sodium chloride in the diet. Adrenalectomy causes a marked increase in the granularity of the JG cells in the cat and rat. Injections of desoxycorticosterone, combined with the drinking of 1% saline, cause a virtual disappearance of juxtaglomerular granules in the rat, while the 1% saline alone produces only a minor drop in JG granularity. If the same amount of desoxycorticosterone is combined with a drastic restriction of sodium in the diet, hypertension is completely prevented and the JG cells undergo either relatively little or no degranulation.

Data from various laboratories indicate that variations of sodium content of the diet of rats produce little change in the sodium concentration of the plasma. However, diets low in sodium cause a decrease in total blood volume with a converse result of diets high in sodium. Presumably, the volume of blood in the afferent arterioles changes with the alterations in total blood volume. In this case, the JG cells would be stretched less when the intake of sodium is low and stretched more when it is high. Such alterations in stretch would be expected to produce effects in the JG cells.

In describing the physiology of the juxtaglomerular cells, one has to consider their intimate association with renin. Studies have identified the source of renin to be in the glomeruli or in their attachments (which include the JG cells). Further microdissection has localized the source of renin to "juxtaglomerular" structures, although not specifically localizing it to the JG

cells. Many studies indicate a parallelism between the amount of extractable "renin" in a kidney and the granularity of the JG cells. The sum of the evidence would indicate that renin or its precursor is primarily located in the JG cells.

It is likely that a considerable change in the rate of secretion of the JG cells can occur with minimal change in their granularity. The few pieces of available evidence favor the hypothesis that hypergranulation is present during periods of rapid secretion, and degranulation during periods of very slow or absent secretion.

With the array of recently available data concerning the JG cells, it is still difficult to be sure just what function they subserve in the mammalian organism, although it is natural to implicate the cells in any physiologic phenomenon which seems to depend upon variations in distention of the renal arterial system.

One such phenomenon is the hypertension produced by the narrowing of a renal artery. Under such circumstances, the JG cell may respond to reduced blood flow by increased secretion of renin. However, several pieces of evidence militate against the theory that renin itself maintains the generalized elevation in arterial pressure by a direct pressor effect on the small arterioles throughout the systemic circulation. It is quite possible that the kidney normally secretes an antihypertensive hormone, and that the secretion of the JG cells inhibits the cells subserving the antihypertensive function.

Another physiologic phenomenon which seems to depend upon the degree of distention of the renal arterial bed—and thereby the activity of the JG cells—is the circulatory "autoregulation" of the kidney in which the constancy of renal blood flow and glomerular filtration is preserved in the face of widely varying arterial pressures.

Still another phenomenon that seems to be related to the degree of distention of the renal arterial system is the rate of sodium excretion. It has been found that a rise in the pressure of blood perfusing the renal artery evokes an accelerated excretion of sodium without changing the rate of glomerular filtration with the converse also being true. The perfusion pressure somehow affects the rate of sodium reabsorption by the renal tubular cells. The JG cells could be the sensing element in this process. The varying local concentration of renin might directly or indirectly cause the renal tubule to reabsorb less or more sodium. There is also evidence that renin stimulates the zona glomerulosa of the adrenal so that variations in secretions of renin might indirectly produce varying reactions of the tubular cells by way of variations of concentration of aldosterone.

If the JG cells do sense blood volume changes and influence sodium excretion, they qualify as one of the long sought-after "blood volume and extracellular fluid volume regulating centers." Regardless of speculations, the great reactivity of the juxtaglomerular cell-renin system to diverse

physiologic stimuli strongly suggests that the JG cells have important regulatory functions in health and disease. (L. Tobian, Physiology of the Juxtaglomerular Cells: Ann. Int. Med., 52: 395-410, February 1960)

* * * * *

Potassium in Compensated Hypovolemia

In studying the problem of transfusion-induced cardiac arrest, toxic concentrations of potassium were found to occur in banked blood. During hemorrhagic hypotension, animals are extremely sensitive to injected potassium; renal function is depressed by hypotension and potassium excretion is thus reduced. Hemorrhage has been considered to be one of the best stimuli for liberation of epinephrine. Epinephrine induces glycolysis in the liver with concomitant release of prodigious quantities of potassium. This mechanism also accounts for liberation of potassium from the liver during hypercapnea. Hypoxia acts directly on the liver and brings about a sudden release of potassium sufficient to cause heart block in the dog. During shock, anoxia liberates potassium from cell breakdown, and changes in membrane permeability account for further release.

Shock rarely occurs during clinical surgery. The more common situation is a hypovolemia which is unrecognized because the blood loss has not been of sufficient magnitude to produce a change in vital signs. A loss of 20 to 30% of the circulating blood volume may occur before any change in arterial pressure occurs. When the compensating mechanisms responsible for homeostasis have maintained the vital signs, the condition is referred to as compensated hypovolemia. Although vital signs remain unchanged, these patients tolerate further blood loss poorly.

The authors designed an experiment to study potassium tolerance and blood pressure responses in animals with compensated hypovolemia. The results point out the danger of waiting for changes in vital signs to occur before correcting blood loss.

It has been demonstrated that when the compensatory mechanisms finally fail, marked pressure drops suddenly occur, making rapid massive transfusion necessary. The experiments illustrate that removal of potassium from the blood is impaired in acute compensated hypovolemia, even though blood pressure is maintained. Therefore, tolerance for hyperkalemic banked blood is appreciably impaired.

After repeated transfusions of banked blood, toxic levels of potassium can develop. A slight fall in blood pressure is likely to follow a transfusion of hyperkalemic blood when a compensated hypovolemia exists. This fall in pressure may be interpreted as undertransfusion. Further transfusion will then lead to overtransfusion and a continued fall in arterial pressure will set a vicious cycle into action. Monitoring the venous pressure eliminates the

tendency to transfuse when arterial pressure drops during overtransfusion. Exact measurements of blood loss by the conductivity method allow for immediate and accurate replacement and obviate the hazards described. (H. H. LeVeen, M. D., B. Schatman, M. D., G. Falk, B. S., The Consequence of Repeated Infusions of Potassium in Acute Compensated Hypovolemia: Surgery, 47: 364-367, March 1960)

* * * * *

Platelet Response to Surgical Procedures

Studies concerned with behavior of circulating platelets during and following surgical procedures show wide discrepancies in results. The authors observed hourly and daily variations of platelet, eosinophil, and total leukocyte levels during and after extensive and less extensive surgical procedures in patients with and without blood transfusions.

The characteristic response of the circulating platelets to the trauma of extensive surgical procedures was a sudden thrombocytopenia which developed during the operation or within the following 4 hours. After the platelets returned to their preoperative levels on the fifth postoperative day, no appreciable changes were noted until the seventh postoperative day when a sudden thrombocytosis developed and persisted for an average of 6 days. The platelets then returned to their preoperative levels where they remained.

Many theories have been advanced seeking to explain surgical thrombocytopenia and postoperative thrombocytosis. It has been demonstrated repeatedly that surgical trauma causes a release of corticotropin from the anterior lobe of the pituitary gland, stimulating increased secretion in the plasma of 17-hydroxycorticosteroids (17-OHCS) by the adrenal cortex. In concurrence with these findings, the authors noted that the eosinophil levels decreased rapidly with the progress of the operations, either reaching very low levels or disappearing altogether in a few patients. The eosinophils remained at these levels for an average of 3 days and then returned to their preoperative values. Platelet levels dropped simultaneously with the eosinophils and maintained low levels for an average of 3.7 days, after which they too returned to their preoperative numbers. Another observer has noted 17-OHCS levels to return to levels slightly below the preoperative values on the fourth postoperative day.

On the seventh postoperative day in the present study, a sudden eosinophilia developed lasting for an average of 4 days, after which the eosinophils returned to their preoperative levels. Paralleling this sudden rise of the eosinophils, the platelets rebounded similarly and remained at high values for an average of 3 days when they too returned to normal numbers. Thus, a closely parallel, wave-like pattern of fluctuating platelet and eosinophil levels existed from the beginning of the period of surgical stress to the conclusion.

The close relationship between circulating eosinophils and fluctuating plasma steroid levels has been recognized in normal individuals. Because of the parallel fluctuating levels of both eosinophils and platelets during and following major operations, it appears likely that postoperative thrombocytosis, like postoperative eosinophilia, may be responses to the same governing mechanism—hypoactivity of the adrenal cortex following its hyperactivity during stress.

In the authors' study, thrombocytosis usually developed on the third to tenth postoperative day during a 24-hour period which coincides with the time when postoperative venous thrombosis is usually encountered. The meteoric rise of the platelets to 200% above preoperative levels in some instances, associated with pre-existing endothelial damage and diminished circulation, may well explain the development of postoperative thrombosis.

No significant changes in the various blood elements occurred during or after less extensive surgical operations. (H. Pepper, S. Lindsay, Responses of Platelets, Eosinophils, and Total Leukocytes During and Following Surgical Procedures: Surg. Gynec. & Obst., 110: 319-326, March 1960)

* * * * *

Sensitivity of Hemolytic Staphylococci

Despite concerted efforts in the laboratory and clinic to combat the staphylococcus, this organism remains the most important bacterial pathogen. The ability to produce deep-seated infections in almost any tissue of the body and to develop resistance to the majority of antimicrobials makes it particularly difficult to eradicate. To date, no antibiotic has been uniformly successful in inhibiting its growth.

The studies on which this report are based consisted of antimicrobial sensitivity tests performed on 300 strains of staphylococci isolated between 1 July 1958 and 1 April 1959.

Strains of staphylococci isolated from patients with clinical infections were, in general, more resistant to the antibacterial action of antibiotics than those cultured from asymptomatic carriers. Most organisms came from infections acquired in the hospital, and it is well known that staphylococci found in the hospital environment tend to be more resistant than those in the community at large. It is possible that many of the organisms taken from carriers are not truly pathogenic strains and are generally more susceptible to the action of antibiotics.

Since no attempt was made to include a clinical evaluation of the newer agents tested, remarks concerning their efficacy are necessarily based on in vitro data. These results suggest that, of the new agents tested, vancomycin possesses the most bacteriostatic activity and is also bactericidal in a large number of instances. Ristocetin, on the other hand, displayed very

low bactericidal activity; this contrasts sharply with observations of others. This shortcoming, added to its hematotoxic effects, led the authors to abandon clinical use of this drug. Of the newer agents, kanamycin was the best bactericidal drug, although a large number of strains were defined as being resistant to this drug because they were not killed by 10 mcg. /ml. ; at double this concentration the in vitro results with kanamycin were excellent. However, in view of its ototoxicity and nephrotoxicity, its use is not routinely recommended.

Leucomycin was shown to be a good bacteriostatic agent. However, it represents no improvement over erythromycin, oleandomycin, or novobiocin. Signemycin, an antibiotic composed of two parts of tetracycline and one part oleandomycin, was distinctly inferior to oleandomycin alone. One of the claims made for this drug was that these two agents acted synergistically; these studies do not support that contention.

The most gratifying observation was the failure of the majority of strains to acquire resistance to erythromycin and chloramphenicol—the two most commonly employed antistaphylococcal agents. Except for minor variations, resistance of the staphylococcal flora has not increased during the past 3 years. This raises the sobering thought that these organisms continue to produce troublesome infections despite a state of relative susceptibility to most antimicrobials.

Bacteriophage typing has become an integral part in the study of the epidemiology of staphylococcal infections. While there is no evidence that the susceptibility of staphylococci to antimicrobials is in any way related to their susceptibility to certain bacteriophage, from a practical point of view, there appears to be excellent correlation between the phage type of certain strains and their susceptibility to antibiotics. All organisms lysed by phage 81 are resistant to penicillin and tetracycline, even in high concentrations. In addition, organisms of this type also tend to be slightly more resistant to erythromycin and novobiocin. Strains of phage type 44A from hospitalized patients tend to follow a similar pattern. On the other hand, the majority of strains in phage Groups I, II, III, and nontypable strains are inhibited or killed by penicillin. By virtue of its bactericidal action, ease of administration, and low cost, penicillin remains the drug of choice in staphylococcal infections caused by phage types other than 81.

The authors make no attempt to correlate the in vitro observations reported with the outcome of clinical infections, particularly since the many variables governing the outcome of a severe staphylococcal infection make the evaluation of any single antibiotic exceedingly difficult.

The authors firmly believe that severe systemic staphylococcal infections acquired outside the hospital or caused by phage types other than 81 should be treated with large doses of penicillin—20 to 40 million units per day in conjunction with probenecid. They also tend to add a second agent, such as chloramphenicol or erythromycin, to this regimen. However, patients

who have clearly acquired the infection in the hospital or whose etiologic staphylococcus is lysed by phage 81 should be treated with vancomycin and chloramphenicol from the outset. Depending upon the result of detailed in vitro tests, erythromycin, novobiocin, or oleandomycin may be substituted for chloramphenicol; and kanamycin, bacitracin, and neomycin—in order of preference—for vancomycin.

The authors strictly adhere to the concept that an agent capable of exerting bactericidal action is the drug of choice in deep-seated staphylococcal disease. Fortunately, the results with vancomycin have been gratifying. The organisms have not become resistant during treatment, and toxic reactions have not presented a problem.

Each case of staphylococcal infection, of course, must be treated individually; adequate surgery, proper nutrition, and other supportive care are as much a part of treatment of these patients as antimicrobials.

Analysis of in vitro data revealed that of all strains examined, only one or two percent were resistant to all agents against which they were tested. Despite this encouraging picture, many cases of staphylococcosis culminate in therapeutic failures. Such examples merely emphasize that the solution of the staphylococcal problem does not lie in the discovery of new and more potent antimicrobials. Rather, careful studies of the host's response to the infection are more likely to yield an answer.

(R. G. Petersdorf, et al., The Sensitivity of Hemolytic Staphylococci to a Series of Antibiotics - II. A Three-Year Progress Report: A. M. A. Arch. Int. Med., 105: 398-412, March 1960)

* * * * *

Unsuspected Prostatic Carcinoma

At the hospital of the authors' experience, carcinoma of the prostate is found in suprapubic prostatectomy specimens approximately five times each year. Almost invariably this is clinically unsuspected carcinoma and, in a sense, represents an error of preoperative diagnosis. When this occurs, the surgeon is faced with a therapeutic decision and must consider castration, estrogen administration, secondary radical prostatectomy, or perhaps no further therapy. The individual urologist has only a limited personal experience with this clinical situation. He must, therefore, rely upon the results of collected studies for guidance in therapy. This study is concerned with the clinicopathologic findings in patients in this category and with the correlation of these findings with survival.

Microsections from 847 consecutive patients, upon whom suprapubic prostatectomy was performed from 1940 through 1953, were the source of material for this study. In 55 cases (6.5%), adenocarcinoma was found in the specimen when a preoperative clinical diagnosis of benign prostatic hyperplasia

was made. Secondary radical prostatectomy was not done in any of these cases.

Age. Of the 55 patients studied, the youngest at the time of suprapubic prostatectomy was 53 years of age, the oldest 88. The mean age of the 847 patients undergoing suprapubic prostatectomy was 67.8 years; the mean age for the patients with unsuspected carcinoma was 71.3 years. The difference between the mean ages is statistically significant.

Preoperative Findings. In all patients, NPN values, chest roentgenograms, and IV pyelograms were within normal limits. The serum acid phosphatase was elevated in 10 of the 55 patients; of the 10, 3 died of carcinoma, 5 died of other causes with the status of carcinoma unknown, and 2 died without evidence of cancer.

Operative Findings. The surgeon reported difficulty during enucleation of the adenomatous prostate in 17 cases. Of these, 2 are alive and well 5 and 11 years postoperatively; both had small, well differentiated cancers. Two died of other causes without recurrence. The remaining 13 patients either died of cancer or had evidence of cancer at the time of death.

Complications. Permanent urinary incontinence occurred in 5 cases; in all 5, the cancer was large. The cancer was well differentiated in only one case—this patient is alive and well.

Antiandrogenic Therapy. Some type of antiandrogenic therapy was used in the majority of the patients either at the time the diagnosis was established or at a later date. Eight patients were treated by orchiectomy alone; 41 were treated with stilbestrol alone. Twelve patients received stilbestrol after orchiectomy. Two patients received x-ray therapy postoperatively. Nineteen patients received no antiandrogenic therapy of any kind. Analysis of data reveals that antiandrogenic management had no influence upon survival. However, it is of interest that all but one of the patients who died of carcinoma received some type of antiandrogenic therapy. Half of the patients with a favorable outcome had neither orchiectomy nor estrogens.

Weight of the Specimen. No significant correlation was found between the weight of the specimen and the clinical outcome.

Degree of Differentiation. Twenty-eight patients were found to have well differentiated cancers. All who are living without evidence of disease had cancers of this histologic type. Six of the 9 patients who died within the follow-up period without evidence of cancer also had well differentiated tumors. Four patients with well differentiated lesions died of cancer; all, however, survived for 6 years or more.

Twenty-four patients had cancers classified as moderately or poorly differentiated. Only 3 were thought to have a favorable outcome.

The correlation of clinical outcome with degree of differentiation demonstrates an association of favorable outcome with well differentiated cancers to a high degree of significance. More well differentiated carcinomas were found in patients under 75 years of age than in those of 75 or older, but the tendency does not achieve an acceptable level of statistical significance.

Size of Lesion. Twenty-three patients had lesions classified as small; 14 had a favorable outcome. Of the 29 patients harboring large lesions, only 9 had a favorable outcome. The association of favorable outcome with small lesions is significant at the 5% level.

Margin of Enucleation. Tumor was absent at the margins of the enucleation in 6 cases. Four patients are still alive without evidence of cancer, 15, 11, 11, and 5 years after surgery, respectively. Of 46 patients with tumor at the margin of enucleation, 18 were considered to have a favorable outcome.

Survival. Survival curves show a crude 5-year survival of 54% and a 10-year survival of 37%. A 5-year survival of 75% and a 10-year survival of 47% were obtained for patients with well differentiated lesions. Of the patients with moderately or poorly differentiated lesions, 33% are alive after 5 years and 14% are alive after 10 years.

The material presented by the authors supports the view that the microscopic differentiation and size of an "occult" carcinoma of the prostate are related to the survival of the patient. Patients with small, well differentiated cancers have done well clinically and may not require further therapy. There is no evidence from this study that antiandrogenic therapy has increased their survival.

However, patients with less than well differentiated carcinoma have a decidedly poor outlook and have not been demonstrably benefited by orchiectomy or estrogens. Secondary radical prostatectomy may be a rational approach for treating the large and moderately or poorly differentiated cancers discovered by suprapubic prostatectomy. (W. C. Bauer, M. H. McGavran, M. R. Carlin, *Unsuspected Carcinoma of the Prostate in Suprapubic Prostatectomy Specimens: Cancer*, 13: 370-378, March - April 1960)

* * * * *

Coronary Mimicry

The ancient and admirable precept of the Coan school, "make a habit of two things—to help, or at least to do no harm," is more apropos today than it was when medicine was practiced in the sunlit groves of a Greek temple. It is bad enough when we do our patients harm by over zealous or misguided therapy; it may be even worse when we injure them with a false diagnostic label. The great Frank Wilson, shortly before his death, expressed the disillusioned regret that most people were in greater danger of having their peace and happiness shattered by an erroneous electrocardiographic interpretation than of being injured by an atomic bomb.

The potential of misdiagnosis is well illustrated by a case recently described. A bus driver's chest pain was clinically attributed to coronary thrombosis, and an ECG was said to confirm the presence of "angina." Thus, stigmatized with a "coronary" diagnosis, he spent 6 weeks in bed and then

vainly attempted to obtain reemployment to support his invalid wife and four small children. After repeated unsuccessful attempts, depression overcame him and impelled him to suicide. Necropsy revealed normal coronary arteries and a healthy myocardium.

That the ECG possesses this harmful potential is not widely appreciated, even among the medical elite. Therefore, it seems worthwhile to emphasize how harm can accrue to the defenseless patient who is the victim of electrocardiography.

The great majority of electrocardiographogenic injuries are caused by labeling as "coronary" various patterns that are not produced by coronary disease. Some are produced by equally serious cardiac involvement that is not coronary in origin; then the error is more academic than harmful. But, at the other extreme, are normal variants that are not recognized as such—here the injury may be real. Intermediate are the changes which are decidedly abnormal but which are due to factors other than cardiac.

Of the normal or near-normal variants, T wave aberrations are most frequently encountered and are produced by widely varied conditions. Conduction disturbances and S-T segment shifts also are commonly subject to misinterpretation.

Other situations which lead to erroneous ECG diagnoses are abnormal changes induced by stimuli arising outside the heart. This list is extensive and varied, and includes diverse physiologic and pharmacologic influences. Such changes are obviously not indicative of heart disease, and revert to normal soon after the stimulus is removed.

Another group of situations reflecting on the ECG are a group of extra-cardiac diseases. In many of these, the myocardium becomes secondarily diseased—but usually reversibly so—and the prognosis for the heart, unless it becomes overwhelmingly involved, is the same as that for the underlying extra-cardiac disease. This list also is extensive and includes allergic reactions, vitamin deficiencies, anemia, hemorrhage and shock, various infections, endocrine disorders, and many others.

A final group consists of the noncoronary diseases which directly invade and involve the heart and are predominantly irreversible. Many are of serious import and the distinction from coronary involvement is often more of academic interest than of benefit to the patient. From a diagnostic point of view, however, the distinction may be important, because the erroneous label of coronary disease may prevent the physician in charge of the patient from searching further for the true lesion. Included in this group are: rheumatic disease, hypertension, pulmonary disease, diseases of metabolism, connective tissue diseases, neuromuscular disorders, and others.

In the author's review, nearly 100 situations have been catalogued in which the electrocardiographic pattern can be confused with that of coronary disease. He reaffirms the need to be aware of the numerous pitfalls of electrocardiography and supplies a systematic reference catalogue of coronary imitators.

The electrocardiograph machine is an instrument of considerable precision, but the interpretation of its precise record is another matter, for the ECG has a high coefficient of nonspecificity; it never proclaims the cause of the disturbance it reveals, except by inference. Thus, while it is important to realize that a normal ECG by no means excludes heart disease, it is even more important to recognize the converse—which is indeed the main message of the review—that an abnormal ECG does not necessarily indicate an abnormal heart. (H. J. L. Marriott, Coronary Mimicry - Normal Variants, and Physiologic, Pharmacologic and Pathologic Influences That Simulate Coronary Patterns in the Electrocardiogram: Ann. Int. Med., 52: 411-427, February 1960)

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Need for Physicians under the Universal
Military Training and Service Act

LT GEN Lewis B. Hershey, Director of Selective Service, has announced that the Armed Forces continue to need most physicians liable for active duty under the Universal Military Training and Service Act. This reminder was issued when it became apparent that a few physicians who had been deferred for residency training in certain specialties would not be called to active duty.

Shortages now exist and will continue to exist in certain specialties as well as in the group without specialization, according to information from the office of Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical). Physicians are urged not to draw erroneous conclusions concerning the need of the Armed Forces for their services. If a considerable number of physicians conclude they are not needed—basing their decision on knowledge that some Reserve Medical officers in a few specialties are not being called to active duty after residency—existing shortages in the Armed Forces will be aggravated.

The Department of Defense has found it unnecessary to requisition physicians through the Selective Service System since early in 1957 because of a sufficient pool of Reserve officers. Nevertheless, GEN Hershey emphasized the continuing need for applicants for the residency program, and for physicians who will accept a Reserve commission and report for active duty at the conclusion of internship.

The temporary surplus in some specialties in the residency program may be attributed to: estimation of needs 4 to 5 years in advance; revisions in Armed Forces strength; redistribution of troops; reorganization of hospital systems; specialists choosing a military career; and voluntary extension of duty tours by Reserve officers. (TIO, BuMed)

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IN MEMORIAM

Scott, Kenneth S. CAPT MC USN (Ret)	
West Chester, Pa.	27 February
Johnson, Fenimore Stratton CDR MC USN (Ret)	
U. S. Naval Hospital, Philadelphia, Pa.	27 February
Duer, Thomas LT MSC USN (Ret)	
U. S. Naval Hospital, San Diego, Calif.	28 February
Murphy, Joan Patricia LTJG NC USNR (Active Duty)	
Milton, Fla.	2 March
Millspaugh, Judson Albert CAPT MC USN (Ret)	
Port Wentworth, Ga.	5 March
Mugrage, Ralph McClellan CAPT MC USN	
U. S. Naval Station, San Juan, Puerto Rico	13 March
Moorer, Leslie Ewing CWO USN (Ret)	
U. S. Naval Hospital, Pensacola, Fla.	21 March
Headley, Albert Virgil LT MSC USN (Ret)	
U. S. Naval Hospital, Bethesda, Md.	23 March
Walsh, John A. CAPT DC USN (Ret)	
U. S. Naval Hospital, St. Albans, N. Y.	15 April

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Dedication of Portsmouth Hospital

Dedication ceremonies for the new U. S. Naval Hospital, Portsmouth, Va., were held on 22 April 1960, with RADM Edward C. Kenney, Deputy and Assistant Chief of the Bureau of Medicine and Surgery giving the dedicatory address. RADM H. J. Van Peenen, Commanding Officer, accepted the hospital, the tallest building in the Norfolk-Portsmouth complex.

The new hospital—an 800-bed "skyscraper" built at an approximate cost of 15 million dollars—replaces the original naval hospital at that site which was built between 1827 and 1832. Ground-breaking ceremonies were held in June 1956 after construction of the badly needed building was authorized by Congress in 1952.

Closing the "first" naval hospital will bring to an end a long and illustrious history. For a period, it was a fortification, it figured prominently during the Civil War, and was the mainstay of hospital facilities in Norfolk and vicinity during a yellow fever epidemic which accounted for thousands of deaths during the middle 1850s. The first patients were received in 1830, although the buildings were not completed until 1832. The original hospital, constructed at an approximate total cost of \$301,000, has remained essentially unchanged since completion, although the main building was enlarged in 1909. (TIO, BuMed)

Endodontics - Dental Training Film

Additional prints of the three-part color dental training film entitled Endodontics (MN-8566 a, b, and c) are now available. An error in the announcement said that each of the three parts of the picture would run for 45 minutes. This figure represents the total running time of the three parts. The time for each is as indicated with its synopsis.

Diagnosis and Case Selection (MN-8566a, 13 minutes) emphasizes the necessity of applying several specific diagnostic aids to each potential case for endodontic treatment. An animated chart tabulates the effect of each aid. The film provides five questions as a guide to the Dental officer in diagnosing and deciding to treat, or not to treat, patients by endodontic means. Radiographs, animation and live photography of both patients and dental models illustrate conditions which indicate or contraindicate endodontic treatment.

Biomechanical Preparation of the Root Canal (MN-8566b, 17 minutes) is a step-by-step demonstration of the preparation of the root canal for filling. It illustrates debridement, enlarging, irrigation, and chemical disinfection. Emphasis is on aseptic precautions—in particular, strict bacterial culture control. Extreme close-ups are provided in all scenes of important detailed action.

Filling the Root Canal (MN-8566c, 15 minutes) recalls to the viewer the great care taken in maintaining aseptic conditions during preparation. Then the film demonstrates in detail the filling of root canals by both lateral condensation of gutta-percha and use of silver cones, and filling of the pulp chamber. Emphasis is on the precision required for complete obliteration of the root canal lest it continue to be a source of periapical irritation. Aseptic precautions are observed throughout and, as in the second part, extreme close-ups illustrate all details.

Initial distribution of prints was made to Naval Hospitals and District Training Aids Sections and Libraries. If prints are not available from the usual source, address inquiry to the Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C.

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Declassification of Documents

In consonance with the intent of OpNav Notice 5500 of 12 December 1959, to remind on a continuing basis all officers and civilian employees of the Navy Department who create classified documents or are responsible for subsequent declassification, of the burdens resulting from overclassification or failure to declassify, the following points to be considered are presented:

1. In preparing a classified document, designate the paragraphs that contain classified information and mark "unclassified" the paragraphs that do not contain classified information. With this information, others preparing documents that are based on yours may be able to avoid classifying their own papers.

2. Form the habit of challenging the classification of every classified document that seems to you to be overclassified. In that way attention will be directed to documents that may be declassified or downgraded.

3. Familiarize yourself with the declassification exemptions specified in OpNav 5500.40. Your special knowledge and recommendations may lead to elimination of some of the exemptions and a decrease in classification.

NOTE: This series of reminders on the classification of documents will be continued in an early issue.

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Directives

At times, attention is invited to directives of general concern. For economy of space, they are briefly described. Complete copies usually are available at local Administrative or Personnel Offices. When not available locally, copies may be obtained from Navy Supply Center, Oakland, Calif., or Norfolk, Va., or Supply Dept., Naval Weapons Plant, Washington 25, D. C.

BUMED NOTICE 6224

8 April 1960

Subj: Tuberculosis; control of

Prompted by occurrence within the past 8 months of several cases of active pulmonary tuberculosis among crew members of two Navy ships, this directive reiterates the importance of close medical surveillance of naval personnel in regard to this disease.

BUMED NOTICE 6224.6

6 April 1960

Subj: Tuberculosis control program; changes in

To maintain an efficient and economical tuberculosis control program with the present austere personnel ceiling, the Bureau is discontinuing (a) training of

Medical officers for interpretation of photofluorograms, (b) assigning of Medical officers to mobile photofluorographic units, and (c) mailing of photofluorograms to the Tuberculosis Control Unit. This directive establishes changes in the program.

BUMED INSTRUCTION 6224. 7

7 April 1960

Subj: Tuberculous alien dependents of Armed Forces personnel; CONUS hospitalization of

This directive implements provisions of SecNavInst 6320. 8A (Dependents' Medical Care) and promulgates instructions regarding hospitalization in the continental United States of tuberculous alien dependents of Armed Forces personnel.

BUMED INSTRUCTION 6230. 1B

28 March 1960

Subj: Immunization requirements and procedures

This directive, with enclosures, incorporates into the Navy Directives System a revised joint Army-Navy-Air Force directive concerning immunization requirements and procedures to be followed in carrying out the immunization program of the Navy.

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From the Note Book

Armed Forces Epidemiological Board. In an article discussing Research in Preventive Medicine, the author presents the functions of the Armed Forces Epidemiological Board and its Commissions in assisting the Army, Navy, and Air Force in their individual preventive medicine programs and research. (T. Francis Jr., J. A. M. A., March 5, 1960)

ENT Technicians Graduate. The first class of students of the first ENT Technician School in the Navy were graduated at the U. S. Naval Hospital, Oakland, Calif., on 1 April 1960. The school, established by the Bureau of Medicine and Surgery early in 1959, has been followed by similar schools at San Diego, Philadelphia, and Bethesda. The graduation ceremonies climaxed nine months of intensive training, including a week of instruction in audiometry at the University of California Medical Center. (TIO, BuMed)

Increase of Hepatitis. At the end of the first quarter of 1960, the reported number of cases of hepatitis is about 37% above the comparable figures for

1959 and exceeds the median figure for the period 1955-1959. The increase is most apparent in the East South Central geographic division. Figures for the other Central Divisions and the South Atlantic Division are more than 40% larger than the figures for 1959, but the figures for the Middle Atlantic and Mountain Divisions are smaller. The current upswing began in the fall of 1958. (Morbidity and Mortality Weekly Report, U. S. P. H. S., April 8, 1960)

Syrosingopine and Hydralazine. The combination of syrosingopine with hydralazine, in the authors' experience, appeared to produce an antihypertensive response similar to the combination of reserpine and hydralazine. The former appeared to possess less tendency to produce sedation and mental depression. (R. Dunsmore, et al., Am. J. Med. Sci., February 1960)

Determination of Mecamylamine Dosage. To allow prompt determination of the individual optimum dose of mecamylamine and obviate the tedious and prolonged step-by-step method usually required, the authors have established an intravenous technique. The drug, in given concentration and at a specific rate of infusion, is administered until the erect blood pressure achieves the desired level. In their experience, the total amount of drug required for this effect has been found to equal the daily maintenance dose. (R. Maronde, et al., Am. J. Med. Sci., February 1960)

Pilonidal Sinus. A simple marsupialization technique for treatment of pilonidal sinuses employed at Walter Reed Army Medical Center is described. All procedures (225) were performed under local anesthesia. Not only was hospitalization not required, but all military personnel were able to report back to duty in a few days. In the author's experience, infection was not a contraindication to surgery. (D. Abramson, Ann. Surg., February 1960)

X-Ray Therapy and Thyroid Cancer. Data indicate a significantly higher incidence of preceding radiation in children with thyroid cancer than in the general hospital population and support the concept that x-ray therapy is a causative factor in development of thyroid cancer in young persons. (E. Wilson, S. Asper, A. M. A. Arch. Int. Med., February 1960)

Misleading Thoracic Roentgenograms. A series of illustrations demonstrate cardiovascular abnormalities that, on the roentgenogram, may simulate diseases of the lungs, bony thorax, or mediastinum. The recognition of the real cause of these changes may allow treatment of an apparently hopeless condition or prevent an unnecessary operation. (C. Hodgson, et al., A. M. A. Arch. Int. Med., February 1960)

Transmissibility of Staphylococci. Studying staphylococci in relation to their transmissibility to adult patients residing in a hospital environment, the

authors found no evidence that drug-resistant strains were intrinsically more transmissible than drug-susceptible strains. However, transmissibility of staphylococci—principally drug-resistant strains—was considerably increased among patients receiving therapy with an antimicrobial drug (tetracycline). The authors believe this increase may be due to drug-induced interference with usual interspecies relations among nasopharyngeal flora. (C. Berntsen, W. McDermott, *New England J. Med.*, March 31, 1960)

Choline Salicylate. From observations of a limited preliminary survey, the authors consider that choline salicylate has therapeutic effects in rheumatic fever and rheumatoid arthritis comparable to those of acetylsalicylic acid in corresponding doses, with the added advantage that larger doses seem to be consistently better tolerated. (CAPT G. M. Davis MC USN, et al., *Am. J. Med. Sci.*, March 1960)

Adenoviruses and Respiratory Illness. Ten Naval recruits were sampled repeatedly during recruit training for symptoms of respiratory illness and detection of adenovirus infection. It was not possible to distinguish a particular group of symptoms that could be ascribed to adenovirus infection. It was concluded that other agents or factors must be considered responsible for the chronic respiratory complaints experienced by most recruits. (I. Schultz, et al., *Am. J. Hyg.*, March 1960)

Determination of Residual Urine. The author presents a method of measuring the bladder on the residual urine cystogram which is simple and brief. Information desired can be obtained without subjecting the patient to a painful and perhaps dangerous catheterization. Correlation was favorable with measured residual volumes. (H. Hershman, *J. Urol.*, March 1960)

Peptic Ulcer and Respiratory Acidosis. From observations, the author concludes that no evidence has been found to support the hypothesis that chronic respiratory acidosis, such as seen in patients with chronic bronchitis and emphysema, causes either an increased secretion of acid by the stomach or an increased incidence of chronic peptic ulceration. (M. Platts, *Gastroenterology*, March 1960)

New Tube for Gavage. Among the more serious complications which attend use of semirigid esophageal gastric tubes are nasopharyngeal irritation, obstruction, perforation of nasal membrane and septum, epistaxis, pressure necrosis with ulceration, and rupture of an esophageal varix. However, the most frequent and serious complication is reflux peptic esophagitis. To prevent these complications, the authors describe a tube for gavage which is easily prepared from a Penrose drain tube and is free of untoward effects after prolonged use. (R. Capper, et al., *Geriatrics*, March 1960)

Leukemia in A-Bomb Survivors. Current evaluation of survivors of the Hiroshima atomic bomb survivors shows the incidence of leukemia to be higher among those closely exposed than among those more remote from the hypocenter. It reached its peak between 1950 and 1952, but still remains higher than would be expected in the general population. No apparent difference in the natural history of the specific types of leukemia in exposed and nonexposed Japanese has been observed. (R. Heyssel, et al., Blood, March 1960)

Estimation of Hepatic Blood Flow. Studies with indocyanine green, a dye extracted exclusively by the liver and excreted in the bile, have given indication that this technique may provide a valuable estimation of hepatic blood flow. A modification of the test might prove of value as a liver function test in rapid evaluation of patients with suspected cirrhosis, when faced with the diagnosis of upper gastrointestinal hemorrhage. (K. Reemtsma, et al., Surg. Gynec. & Obst., March 1960)

Regeneration in Fatty Liver. Studying rats fed on a choline-deficient diet, the authors found that when livers became markedly fatty, formation of new hepatic parenchymal cells was increased. This preceded onset of cirrhosis. Further, it is suggested that degree rather than mere presence of fat is of importance. (R. MacDonald, et al., A.M.A. Arch. Path., February 1960)

17-Ketosteroids in Liver Disease. Low urinary 17-ketosteroid excretion has been demonstrated in patients with a wide variety of liver diseases. This finding is consistent with the hypothesis: decreased catabolism of 17-ketosteroid precursors because of liver disease leads to rise in their effective concentration, eventual inhibition of production and release of 17-ketosteroid precursors, and eventual decreased excretion of metabolites. (M. Franklin, et al., Am. J. Med. Sci., March 1960)

LSD in Psychotherapy. With lysergic acid diethylamide therapy, most patients observed by the authors showed greater depth of therapy and greater acceleration of therapy than they had shown with previous drugless psychotherapy. Many patients who would be unacceptable for analysis or almost any type of deep psychotherapy were benefited by LSD therapy. (A. Chandler, M. Hartman, A.M.A. Arch. Gen. Psychiat., March 1960)

Ascorbic Acid in Wounded Tissue. Employing radioactive ascorbic acid, the authors demonstrated increased concentration of ascorbic acid in wounded muscle of guinea pigs when compared to intact muscle. There was no well defined difference in the pattern of distribution in scorbutic guinea pigs as compared with the normals. The significance of these findings is being investigated further. (R. Postlethwait, et al., Surgery, March 1960)

DENTAL**SECTION**

Biologic Effects of High Speed
Dental Cutting Instruments

With the advent of new dental cutting instruments, there has been a resurgence of interest in the dental pulp and the effect of these newer cutting methods upon it. An experiment investigated the effect of: (1) a conventional rotary instrument, (2) a conventional instrument equipped with a high speed motor and a large pulley, (3) one water turbine, (4) two air turbines, and (5) a high speed belt transmission handpiece.

Using 11 monkeys, Class V cavities were prepared in 244 teeth, leaving 61 teeth uncut as controls. All cavities were prepared with the same #35 inverted cone tungsten carbide bur utilizing a water spray coolant. The cavities were filled with zinc oxide and eugenol. One-third of the teeth were removed after 2 days, one-third after 14 days, and the remainder after 28 days.

After fixation, the teeth were decalcified, sectioned serially, and stained with hematoxylin and eosin.

Microscopic examination revealed that the significant changes consisted of displacement of odontoblastic nuclei into the dentinal tubules, loss of the odontoblastic layer, cellular infiltration of the cell-free zone, and secondary dentin in some teeth when time permitted its formation.

One of the methods of cavity preparation using an air turbine produced a significantly greater response than the other five methods, although in all cases the reactions were mild. (CAPT L. S. Hansen DC USN, Naval Dental School, Bethesda, Md.)

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Diagnosis for Complete Dentures - Slide Lecture

The third in a series of slide lectures prepared by the U. S. Naval Dental School, NNMC, Bethesda, Md., is now available for loan on a short term basis. This study set—Diagnosis for Complete Dentures—consists of 81 slides, 35 mm., colored, and a bound narration in lecture form, slide file, handviewer, and carrying case packaged to facilitate their use by students, instructors, or professional groups. The first two sets of the series, previously available, are Mouth Preparations for Removable Partial Dentures and Remount Technique

for Occlusal Correction of Complete Dentures. In addition, a pathology course entitled Non-Neoplastic Oral Lesions is available for individual home study. This course consists of 25 microscopic slides together with a booklet which gives the clinical history, microscopic description, and diagnosis of each slide.

The loan of a study set may be obtained by submitting a letter request in the following form:

From: _____

(name, rank, full address)

To: U. S. Naval Dental School, Commanding Officer (Code 7)
National Naval Medical Center
Bethesda, Md.

Subj: Illustrated lecture; request for loan of

1. It is requested that I be granted the loan of the illustrated lecture _____ for approximately two weeks.

2. It is requested that the period of the loan commence on, or about, _____ 196 , to expire not later than two weeks from date of receipt.

3. I will exercise due care in handling and stowing this training material and will return it in the original carton with the enclosed franked address labels attached at the expiration of loan period.

(Signature)

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Referral of Patients for Prosthetic Care

The Manual of the Medical Department, Article 6-103(4) requires that Dental officers on duty at activities without prosthetic facilities insure that all oral surgical and operative treatment has been completed on personnel being referred to other commands for prosthetic care. Professional courtesy and the interests of the patients also require that Dental officers personally notify the prosthodontist in advance of the names, dental needs, and any other pertinent information concerning patients to be referred for prosthetic treatment.

No patient should be sent for prosthetic care until an appointment time has been obtained from the prosthodontist by the referring Dental officer. It is especially important for Dental officers in ships to send advance notice of their prosthetic patients when their ships have a short stay in port. This advance notification is necessary to enable prosthodontists to reserve or change appointments to care for patients from ships who require restoration of extensive losses of masticatory function or replacement of anterior teeth for esthetic reasons.

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NDS Chapter of Academy of General Dentistry

On 25 March 1960, in a brief ceremony at the U. S. Naval Dental School, Bethesda, Md., RADM C. W. Schantz DC USN, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry) and Chief, Dental Division, presented membership certificates to fifteen officers of the U. S. Navy Dental Corps, who will form the nucleus of the Dental School Chapter of the Academy of General Dentistry. Certificates were presented to: Commanding Officer, CAPT E. G. F. Pollard; Executive Officer, CAPT E. E. Jeansonne; CAPTs W. A. Newman, M. G. Wheatcroft, A. W. Grant, G. W. Ferguson, R. B. Lytle, C. L. Bohn, J. B. Ferris, C. M. Heck, and J. F. Pennington; CDRs L. M. Armstrong and J. D. Shaw; and LCDRs E. C. Penick and J. J. Thomas Jr.

The Chapter was formed by these officers with the firm conviction that an active Chapter at the Naval Dental School would provide an added stimulus to continue the postgraduate education and training of those Dental officers who graduate each year from the School and resume their regular assignments in providing dental care for Navy and Marine Corps personnel. Moreover, it is believed that such an incentive may inspire newly graduated officers to form groups within their assigned duty stations to further the interests of others in achieving and maintaining the highest professional standards of dental practice. It is the intent of the Naval Dental School Chapter to assist the graduates of the School in planning study groups and clinics and provide them with advice and assistance in following proper procedures necessary for the procurement of prepared clinics, visual aids, and other educational materials

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Personnel and Professional Notes

Handpiece Repair Contracts. Distribution of the negotiated contract with the Midwest Dental Mfg. Co. for the repair of higher speed handpieces has

been completed. All costs incurred in utilizing this contract are chargeable to local allotments and not to allotment 13005. Additional copies of, or information pertaining to this contract, may be obtained from Chief, Field Branch (Code 42B), Bureau of Medicine and Surgery, Brooklyn 32, N. Y.

Direct Denture Reliners. The American Dental Association recognizes the wide use of direct denture reliners and the hazards associated with their use. For other than temporary use, it is recommended that the denture be relined or rebased by employing a cast and flasking technique.

Dr. Granger Lectures at NDS. Dr. E. R. Granger, Assistant Professor, University of Pennsylvania School of Dentistry, recently presented a lecture "Treatment of Occlusion," to Dental officers of the Armed Forces, civilian dentists, and other scientific personnel of the Washington, D. C. area. This was part of the special lecture series presented by the U. S. Naval Dental School.

LCDR George to Present Lecture. LCDR R. E. George DC USN, Assistant Dental Officer, U. S. Naval Air Station, Brunswick, Me., will present a lecture and movie film on "Emergency Tracheotomy" with a facsimile neck for audience participation at the Maine Dental Society annual meeting, Friday, 17 June 1960, at the Hotel Samoset, Rockland, Me.

Children Visit Orange Dental Department. A group of second grade students from Jones Elementary School, Orange, Texas, recently visited the Dental Department of the Texas Group, Atlantic Reserve Fleet. As a part of the students' health science studies and in conjunction with the National Dental Health Week, these students were conducted on a tour of the Dental Department by CAPT M. B. Shipley DC USN, Group Dental Officer. They were given a brief examination, presented with a tooth brush, and shown a cartoon on oral hygiene.

CAPT Fowler Presents Clinic. CAPT W. M. Fowler DC USN, Senior Dental Officer, Marine Corps Recruit Depot, Parris Island, S. C., recently presented a clinic entitled "Periodontal Considerations in Partial Denture Design," before the Spring Meeting of the Coastal District of South Carolina Dental Society at the Sea Island Motel, Beaufort, S. C.

CAPT Eastman Presents Lecture. CAPT Arthur D. Eastman DC USN, U. S. Naval Station, Treasure Island, San Francisco, Calif., presented a lecture and demonstration on 25 March 1960, before a study group of the Oakland Dental Society on correcting centric relation and equilibrating complete dentures by the use of a mechanical intra-oral balancer.

International Association of Dental Research. The following papers were presented before the IADR as part of the Navy Dental Corps' Intramural Research Program:

1. Tooth-Pulp Temperature Changes Produced by Cutting with Air Turbine Handpieces - Capt M. G. Wheatcroft DC USN
2. Microbial Changes as a Result of Full Mouth Extractions - I. L. Shklair
3. Parotid and Serum 17 Hydroxycorticoid Levels in Necrotizing Ulcerative Gingivitis - Capt R. H. Loving DC USN
4. Studies on Oral Veillonella - Cdr M. A. Mazzarella DC USN
5. Ascorbic and Plasma Levels and Oral Health in Personnel Wintering Over in Antarctica - Lt M. J. Perlitsch DC USN
6. Evaluation of Panoramic X-Ray Procedures - Capt L. M. Kraske DC USN
7. Clinical Trials of Caries Inhibitory Dentifrices - Capt F. M. Kyes DC USN
8. Visual and Chemical Effects of Surface Acid Penetration into Tooth Slices - Cdr L. W. Wachtel MSC USN
9. Isolation and Partial Fractionation of Fluorescent Material from Human Teeth - U. Laurila
10. A Glucose Tolerance Test Employing Parotid Secretions - Capt R. B. Wolcott DC USN
11. Carbohydrate in the Parotid Secretion - T. B. Weber
12. Dietary Influence on Oral Flora and Caries in the NMRI-D Rat - Capt C. A. Ostrom DC USN
13. Effects of Osseous Implant Materials on Regeneration of Alveolar Cortex - Cdr P. J. Boyne DC USN
14. Biologic Effects of High Speed Dental Cutting Instruments - Capt L. S. Hansen DC USN
15. Phagocytosis In Vitro by Salivary Corpuscles - Cdr G. H. Rovelstad DC USN

CDR Mumme Presents Clinic. CDR H. T. Mumme Jr. DC USN, U. S. Naval Station, New Orleans, La., presented a table clinic, Quick Temporary Crown and Bridge Prosthesis, before the Louisiana State Dental Association's Annual Meeting at the Roosevelt Hotel, New Orleans, 27 - 30 April 1960.

Yokosuka Dental Society Host to Inspector General, Dental. On 10 February 1960, the Yokosuka Dental Society members were hosts at a sukiyaki dinner for RADM C. C. DeFord DC USN, Inspector General, Dental, Bureau of Medicine and Surgery, and the Dental officers of the Naval Dental Clinic, Yokosuka, Japan. All Navy Dental officers present were awarded certificates of honorary membership in the Yokosuka Dental Society and, in addition, the Commanding Officer of the U. S. Naval Dental Clinic, CAPT R. D. Wyckoff DC USN, was presented with a book, "History of the Yokosuka Dental Society."

LT Finton Presents Table Clinic. At the request of the Philadelphia County Dental Society, LT A. M. Finton DC USNR of the U. S. Naval Dental Clinic, U. S. Naval Base, Philadelphia, presented a table clinic on the subject, "Dental Matrix," during the Greater Philadelphia Annual Meeting. Dr. Finton stressed the value of selecting dental matrices which support and give form to the filling during its introduction and setting.

Naval Dental Officers Hosts to Jacksonville Dental Society. Navy Dental officers were hosts to the Jacksonville Dental Society at the annual dinner meeting held at the Commissioned Officers Mess (Open) on 16 March 1960. Major D. L. Spivey USAF, Assistant Executive to the Deputy Commander, Range, Air Force Missile Test Center, Patrick Air Force Base, Fla., was guest speaker. Twenty-seven Navy Dental officers and some 75 civilian dentists attended the meeting. CAPT M. G. Martin DC USN, Staff Dental Officer, Naval Air Training Command, was in charge of arrangements.

Reserve Dental Officers Complete Training. Twenty-nine Dental officers of the Naval Reserve from six Naval Districts completed the annual two-week active duty Military Dental Training Program at the U. S. Naval Dental School, 19 March 1960. The first week of the program was devoted to lectures on casualty care, radiation safety, and various dental subjects—oral pathology, partial dentures, high speed orientation, endodontics, oral surgery, complete dentures, periodontics, oral medicine, and research. The officers were also briefed on the Naval Reserve Training Program and the extension training courses in professional subjects offered by the Naval Dental School. The second week of the program, sponsored by the U. S. Naval Medical School, was devoted to Medical Aspects of Special Weapons and Radioactive Isotopes.

Dental Division Officers Attend Chicago Meeting. CAPT A. R. Frechette, Deputy Chief, CAPT W. R. Stanmeyer, Head, Professional Branch, and CAPT J. A. English, Head, Dental Research Branch, Dental Division, Bureau of Medicine and Surgery, recently attended a series of special dental meetings in Chicago, Ill. CAPT Frechette attended the meeting of the American Association of Dental Schools as the Bureau of Medicine and Surgery representative and served as a member on the Committee on Civil Defense. CAPT Stanmeyer and CAPT English attended the meetings of the International Association for Dental Research. During the meeting, CAPT English was elected to the office of President Elect of the Association.

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget (19 June 1958)

RESERVE**SECTION****Reserve Nurses to Assist in Recruiting**

Inactive Reserve Nurse Corps officers who are members of faculties, colleges, and university schools of nursing, may request appropriate duty orders issued by their respective commandants to accomplish the following objectives:

Serve as liaison between their commandant, officer of naval officer procurement and their nursing school in all matters of recruiting for the Navy's Medical Department Program.

Insure that good public relations and effective publicity for the Navy are being accomplished at the collegiate or university school of nursing. Toward this end, appropriate pamphlets and brochures are available for distribution to interested individuals.

Interview and appropriately advise eligible candidates for the Navy's undergraduate and graduate nursing student education programs.

Assist their district medical officers in the selection of Ensign 2905 officers.

Nurse Corps officers selected for these assignments will be issued appropriate duty without pay orders which authorizes each such officer to earn retirement and promotion point credits. Also, these officers will be eligible to attend the annual seminars for procurement officers held in the various naval districts.

Interested eligible Naval Reserve nurses should write or visit their naval district commandant (district medical officer) and request appropriate duty without pay orders to act as a local procurement representative.

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Military Nursing Symposium

A Military Nursing Symposium will convene at the Naval Medical School, National Naval Medical Center, Bethesda, Md., 1 - 14 August 1960. This training is intended to bring the Naval Reserve Nurse on inactive duty up-to-date with the current trends in Navy nursing. Instruction will include administration, teaching, surgical and obstetrical problems in time of disaster, medical experiences on the NAUTILUS and of Operation Deep Freeze, and, aerospace medical problems.

Messing facilities are available; accommodations in Nurses' Quarters are limited on a first-come first-served basis. Public lodging is available locally in hotels, motels, and tourist homes. Uniforms: Dress Blue Bravo; Indoor White; Light blue summer or gray working. Security clearance is not required.

Eligible to attend are Naval Reserve Nurse Corps officers who are not on active duty. Applicants should submit requests to their naval district commandants. Quotas have been allocated to all naval districts (less 10, 14, and 17).

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Warrant Officer Promotions Accelerated

Warrant officer promotions will soon be speeded up for both Regulars and Reserves. New regulations have reduced the service-in-grade requirements for the temporary promotion of warrant officers as follows:

W-1 to W-2, from three years to two years.

W-2 to W-3, from six years to four years.

W-3 to W-4, from six years to four years.

The reduction becomes effective with the fiscal year 1961 selections (to be made in May 1960).

Permanent warrant officers who are advanced temporarily will be issued permanent appointments to their new grade when they have completed the following service requirements: three years for W-1 to W-2, and six years for W-2 and W-3 to W-3 and W-4, respectively.

Permanent warrant officers who twice fail of selection for temporary promotion to the next higher grade shall be retired—if eligible—or have their appointments terminated.

Additional information on WO promotions may be found in SecNav Instruction 1421.2. (The Naval Reservist, April 1960)

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A Reminder

Fitness Reports for Reserve officers shall be completed for the following types of training:

1. Active Duty for Training. Completed after periods of training with or without pay.

2. Inactive Duty Training. Annual fitness reports shall be submitted on officers attached to, associated with, or assigned to a paid drill unit or non-pay specialist unit. Also, fitness reports will be submitted on officers performing appropriate duty.

Annual Qualifications Questionnaire. Annually on 30 June upon receipt of the necessary forms from the cognizant commandant, each Naval Reserve officer on inactive duty shall complete and submit the annual qualification questionnaire in accordance with instructions promulgated by the Chief of Naval Personnel.

Mailing Address. Defined as the address at which a member of the Naval Reserve can be reached quickly at any time by ordinary mail. A member of the Naval Reserve shall keep the cognizant custodian of his records informed of his mailing address. Changes of address should be prepared as follows:

1. Officers: To commandant holding your records. If affiliated with a pay unit, submit report via your unit CO.

2. Enlisted: To your CO, when affiliated with a pay unit. To commandant holding your records if you are not a member of a drill pay unit. A temporary change of residence of six months or less does not require a transfer of records. However, if you have a temporary residence but mail cannot be delivered promptly, you should notify the holder of your records of your address at the beginning and end of your temporary residence.

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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OCCUPATIONAL MEDICINE

Principles of Early Management in Industrial Trauma

More useful years of life are lost because of trauma than because of any disease, including heart disease, diabetes, or cancer. Non-fatal injuries, in spite of compensation laws, company sickness and accident policies, and other measures, all too frequently change the status of a man from that of a happy, useful, self-respecting contributor to society to that of a man who has become an embittered, helpless parasite. We must do our utmost to prevent trauma and, when it does occur, we must minimize its effect by skillful surgery and rehabilitation.

Trauma presents itself in never-ending variations, but still patterns of injury can be seen. An understanding of these injury patterns is helpful in predicting the nature and extent of the injury and its treatment. Thus, the combination of head injury, severe chest trauma, and extremity fractures in automobile accidents is well known. In most modern industries, on the other hand, life-threatening accidents are far more unusual than those which may cause disability. Experienced industrial surgeons know these patterns and consequently know reasonably well what to expect in the injuries that commonly occur in the particular industries they serve.

Immediate Measures. The history of the mechanics of the accident, of the immediate effects of the accident on the patient, and consideration of the patient's past medical history are all important. Study and review of the records of the accidents of a given industry, with emphasis on the surgical implications of the resulting injuries, will help the surgeon develop this sort of understanding.

The history of the state of consciousness from the moment of injury should be ascertained of all patients, keeping in mind the "lucid interval" of epidural hemorrhage. When spine injuries have caused paralysis, it is important to know whether the onset of this complication was immediate or delayed.

The length of the time interval between the occurrence of injury and hospital admission must be known. The interval may be so short that shock has not yet become apparent. An extremely long interval, on the other hand, may preclude primary closure of wounds and also necessitate changes in plans for treatment of open fractures.

The past medical history of the injured patient may be of critical importance. Thus, the patient with preexisting cardiovascular disease, alcoholism, or diabetes will require special preparation for surgical procedures and treatment. The industrial physician should have an advantage in this record as this information should be in the health record of the injured employee. It would be well if a copy of this record were sent along with the patient to the hospital. If this cannot be done, the necessary information must be obtained from the patient himself or his relatives.

Good management of trauma frequently requires that development of the patient's history, special diagnostic procedures, physical examination, and treatment frequently overlap or are carried on concurrently without reference to an established sequence. In the process, it is essential that moving of the patient be maintained at a minimum. Unnecessary and careless movement of the patient may be the cause of further injury in moving from the scene of the accident to the hospital.

If severe external hemorrhage is present, evidenced by bloody clothing or blood on the stretcher, the site of the hemorrhage should be located immediately. When found, it is to be controlled by clamps, pressure, or other appropriate means.

Shock. An evaluation of the degree of shock should be made early in all patients. The manifestations of shock vary depending on the age of the patient, time elapsed since the accident, and the individual variations of the patient. No one of the commonly observed signs is reliable as an isolated observation. In fact, particularly in vigorous young people, few or no physical signs may be present, even when it is obvious from the extent of injury that shock must be present.

From experience, it is known that severe multiple injuries and some types of specific injury, such as open fractures of the femur and extensive fractures of the pelvis, uniformly cause shock. In patients so injured, vigorous antishock therapy should be instituted immediately, even in the absence of clinical signs of shock. Blood pressure, pulse rate, pulse quality, degree of vein filling, color and temperature of the skin, presence or absence of sweating, and mental reaction of the patient should all be considered in evaluating the degree of shock. Dependence on any one or two of these observations may be quite misleading so far as degree, or even presence, of shock is concerned.

There is a tendency to be too dependent on blood pressure determinations in ascertaining the presence or severity of shock. All surgeons have seen patients with nearly normal blood pressures who not only show many of the other signs of shock, but obviously are in moderate or severe shock. The response of the blood pressure to treatment, on the other hand, is a dependable guide to the severity of the shock. If the blood pressure shows a good and sustained response following minimal amount of intravenous therapy, it is fairly certain that the degree of shock is not great. Further,

so long as the blood pressure continues to rise with the treatment, one may be reasonably certain that the shock is being overcome—with exceptions only in certain types of head injury.

Pulse rates are extremely variable when shock is present and are more apt to be reflective of such factors as excitement and pain than of variations in blood volume relationships. However, again, as with the blood pressure, a pulse which slows and improves in quality in response to treatment is usually indicative that the shock is being overcome. Generally speaking, the quality of the pulse parallels the relative normality of the blood pressure, but there are exceptions to this statement.

Pallor, coolness, and sweating go together and indicate a high degree of compensatory peripheral vasoconstriction. These findings, associated with low blood pressure and poor pulse quality, are diagnostic of the shock state. These skin signs may be the first to show improvement after treatment has been commenced.

The peripheral veins in their normal state are generally easily observed and their state of filling is a valuable index. They are, of course, collapsed in shock. After treatment has begun, the state of filling can be valuable as a guide to further therapy. So long as the superficial veins remain empty, there should be no hesitation in giving blood rapidly; as they begin to fill, it is time for the blood infusion to be slowed because this is evidence that the vascular bed and blood volume are coming into balance. If other signs of shock continue to be evident, the difficulty is not attributable to a discrepancy between the blood volume and the size of the vascular tree.

The usual laboratory tests, such as blood cell counts and hemoglobin determinations, are of little value in estimating acute traumatic shock. There are so many unmeasurable variables operating in the transfer of fluid across the barriers between the various fluid compartments which, in turn, change the concentration of these elements in the plasma, that such findings mean little.

Blood volume determinations have found little use in cases of acute traumatic shock. Such studies are still cumbersome, difficult to perform, and time-consuming. Further, blood volume may vary in otherwise apparently similar individuals by as much as 500 to 700 ml. In addition, it has not been proven that the normal blood volume of a healthy person is necessarily the optimum blood volume for that same individual after he has been severely injured. An evaluation of the degree of shock and an estimation of the amount of blood to be given are to be based upon the clinical response as revealed by changes in signs and symptoms rather than upon laboratory tests.

Examination of the Patient. Examination of the patient proceeds as shock is evaluated and therapy started. Examination must be complete and thorough, inasmuch as an obvious or painful injury frequently masks a less evident and, sometimes, more lethal injury. All clothing must be removed from the patient. However, prior to this action, a cursory examination should

be made to locate any major fractures or other serious injury. The head may be inspected and felt, looking into all orifices for blood and cerebrospinal fluid. The neck should be examined for contusions, lacerations, and tenderness. If there is tenderness over the cervical spine, or pain on the slightest motion, the area must be protected until x-ray films have been made.

The clavicles and chest may then be subjected to pressure and compression. Fractures will, of course, cause pain. Flail chest may be seen and felt. Next, the pelvis should be subjected to pressure and compression over the pubis and iliac spine, with slight pressure at first, and firmer if no injury is found. In a similar manner, the upper and lower extremities should be completely examined.

If the preliminary examination has revealed injuries which can be aggravated by motion, the clothing should be cut away. After removal, the same maneuvers should be applied as in the initial examination, and a more thorough examination accomplished. The entire body surface should be inspected for the presence of abrasions or contusions which may point to deeper and more serious injuries. One should again search for any signs of external bleeding and then proceed to examine the patient completely, evaluating the injuries as the examination progresses.

Head Injuries. The most important indicators of severity of brain damage are degree and duration of unconsciousness. The deeper and longer the state of unconsciousness, the graver the prognosis. Accurate notes should be made as to the state of consciousness, using convenient terminology, such as "coma," "stupor," or "restlessness," and recorded at regular intervals. The skull may be opened by some freak occurrence with the brain protruding and the patient remain conscious.

Localizing signs such as dilated pupils, decreased deep tendon reflexes and the abnormal Babinski reflex, should be sought and the results recorded with a statement as to degree of consciousness for future reference in the administration of treatment.

The presence or absence of depressed skull fracture should be determined. If the scalp has been split, the skull may be explored gently with a sterile hemostat to search for such a depression. All open depressed fractures over the dural sinuses and over the nonsilent areas should be attended to as soon as possible. Closed depressed fractures over silent areas may be left alone for as long as several days, or until the patient is in suitable condition for major surgery.

The nostrils should be carefully inspected. The presence of cerebrospinal fluid means a fracture through the ethmoid or frontal sinuses. The presence of blood in the ears which cannot be attributed to an outside source indicates a basilar skull fracture and is a bad prognostic sign.

The possibility of epidural hemorrhage must be kept in mind at all times. Without proper treatment such injuries are lethal; but when discovered

early and properly treated, the outlook becomes good. Evidence of trauma over the temporal areas should always bring the possibility of epidural hemorrhage to mind.

Generally, roentgenography of the skull should be deferred. The amount of brain damage should be the deciding factor and not the fracture of the skull, unless the fracture is depressed. Occasionally, films are immediately necessary to determine the presence or absence of a depressed fracture. It cannot be emphasized too strongly that in all cases of brain damage, serial determinations of pulse, blood pressure, state of consciousness, and the usual localizing signs should be made and carefully recorded.

If evidence of damage to the neck was discovered during the preliminary examination, further study, as needed, can now be done.

Chest Injuries. The chest is the next area of careful examination. Inequality of excursions or paradoxical movements denoting flail chest may be seen. Fractured ribs are determined by a point of tenderness and noted for intercostal nerve block.

Evidence of subcutaneous emphysema should be sought for over the chest wall and the neck. Crepitation may be felt. If it is most prominent over the base of the neck or the suprasternal notch, mediastinal emphysema is likely to be present. Crepitation of the skin and subcutaneous tissue usually means a fractured rib and torn lung. It may be due to a tear of the bronchus or bronchiole, with no tear in the visceral pleura. The air, in this case, escapes along the course of the bronchi and blood vessels into the mediastinum, and then out over the chest and neck. In the presence of emphysema, one should be doubly on guard for tension pneumothorax.

The usual physical signs of fluid in the thorax are sought. Needle aspiration is valuable in the diagnosis of blood or air in the pleural space. If found, it is wise to continue aspiration until the space is empty, for therapeutic reasons as well as to determine whether there is active bleeding or continued leak of air into the pleural space. An intercostal drainage tube, connected to a water trap or to suction, may become necessary. The return of respiratory function to normal has a high priority in treatment because anoxia increases shock and is particularly harmful to patients with head injuries. Immediate steps should be taken to restore this function to normal.

Severe chest injuries produced by automobile accidents typically consist of fractured ribs, hemopneumothorax, and the "wet lung syndrome." A dramatic change for the better can be produced in these patients by aspirating the airway, blocking the intercostal nerves, and emptying the pleural space by aspiration. Flail chest may be helped temporarily by simply placing a small sand bag over the area. Towel clip traction should be started as soon as possible. By using one to three towel clips fastened about the ribs in the involved area, and attaching their handles to light overhead balanced traction most flail chests can be stabilized. Within a few days, the chest regains sufficient stability so the clips may be removed.

Extremities. Examination of the extremities should be thorough and complete. All extremities should first be inspected for lacerations, contusions, and abnormal contours or positions. Next, they are gently, and then more firmly, palpated. If no evidence of fracture is found, movement of the extremity is made, slightly and gently at first, then more extensively if no injury is demonstrable.

In all cases of extremity injury, the peripheral nerve and vascular function must be determined and recorded. The proper time to find wrist drop due to radial nerve injury is at the time of injury, not when the cast which was applied for the fractured humerus is removed. Peripheral nerve injuries usually can be sufficiently delineated by considering the areas of anesthesia and a few simple tests for motor function. A safety pin is a convenient instrument to use for determining sensation, using the sharp and dull ends as indicated. Areas of anesthesia may be mapped out. Tests for motor function, under these conditions, need not be unduly complicated.

Intra-Abdominal Injuries. These are treacherous. Even in cases of badly damaged viscera with soiling, there may be a lack of physical signs because of shock, prostration, or more painful injuries in other areas. One should look for any signs of skin damage such as abrasions and contusions over the abdominal wall as these may point to deeper injury. Also, watch for the usual signs of peritoneal irritation. It must be remembered that fractures of the lower ribs will lead to upper abdominal signs. An increased area of percussion dullness which is nonshifting and located over the spleen suggests splenic rupture. If this is accompanied by an otherwise unexplainable pain in the left shoulder, it is highly diagnostic.

Needle aspiration in the four abdominal quadrants through an 18 or 20-gauge needle is helpful if positive, but should be disregarded when negative.

Subcutaneous emphysema over the abdomen is rare. When present early, it may be due to air trapped in the layers of a deeply lacerated wound. If it develops after a few hours, it usually means a tear in some retroperitoneal portion of the intestine.

Gastric suction through a nasogastric tube is helpful. It is of the utmost importance that all patients who are to be anesthetized have their stomachs emptied. Vomiting and aspiration during emergency operations cause one or more deaths per year in most large hospitals. Further, if blood is aspirated from the stomach, it is diagnostic of stomach injury, provided sources from above can be ruled out.

Genitourinary Injuries. All patients considered to have possible genitourinary injuries should be catheterized and an examination of the urine specimen made. Gross blood usually means bladder or urethral damage. Microscopic blood usually means kidney damage.

If blood is found in the bladder, it should be irrigated with sterile saline solution. The amount of fluid injected should be measured; a deficiency in amount of fluid returned indicates a leak in the bladder. Cystography

should be performed in any doubtful case for the more reliable information it can give.

If the catheter cannot be passed, it generally means a torn urethra. A suprapubic cystotomy and splinting of the urethra will be required. If the bladder or urethra is found to be damaged, a search for extravasation of urine should be made about the genitalia and lower abdominal wall.

The urine of all injured patients should be subjected to the usual laboratory analysis because preexisting diabetes or urinary tract disease may be present in those patients whose previous histories are unknown.

Digital rectal examination is especially indicated in patients with crushed pelvises or with possible intra-abdominal injuries. Fresh blood on the examining glove may indicate a torn rectum or colon. Occasionally, a tear may be seen through a proctoscope or sigmoidoscope.

Summary. The variations of trauma are almost endless, the forces exerted can be great, and multiple injuries or varying degrees of severity are the rule. First things must come first, and the physician must use judgment as to the relative priority of such multiple injuries. The end of the examination and final evaluation of the patient can come only after all injuries have been identified and their severity accurately assessed.

Although the vast majority of industrial accidents result in minor injuries only, too many still result in permanent disability and death. The very best surgical care should be provided to these accident victims, for truly, they are our most pressing problem in terms of loss of useful and productive years of life. (J. C. Drye, *Industrial Trauma: Principles of Early Management*: J. Occup. Med., 2: 39-44, January 1960)

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A Comprehensive Postgraduate Training Program

Almost every physician devotes some professional time and attention to industrially connected conditions. The University of Michigan Medical Center has developed a comprehensive postgraduate training program in occupational medicine which includes seminars, conferences, and short postgraduate courses as well as graduate courses for qualification for examination by the American Board of Preventive Medicine. Both for specialty training in occupational medicine and for the educational needs of part-time industrial physicians, the facilities of a large medical center are a great advantage. The program at the University utilizes the knowledge and skills of many different components of the Medical Center and of other schools and departments, such as Engineering and Graduate Studies.

Development of the Program in Occupational Medicine. The beginnings of awareness of industrial diseases in the State of Michigan took form and shape about 1875.

The latest era of development of an occupational medical program at the Medical Center started in 1948 when Doctor Clarence Selby, retired Medical Director of General Motors Corporation, joined the staff of the School of Public Health in Ann Arbor. Most conspicuous of the immediate accomplishments was the creation of the Institute of Industrial Health which has catalyzed and implemented the rapid developments in industrial health training at the Medical Center since 1951. Doctor O. Tod Mallery was the Institute's Director until 1956; Doctor Seward E. Miller succeeded him. In 1958, the Department of Industrial Health in the School of Public Health was established with Doctor Miller as Chairman.

Postgraduate Courses. To meet the demand for short intensive courses for practicing physicians, the Department of Postgraduate Medicine of the Medical School and the Institute of Industrial Health are planning a short intensive course of instruction in industrial medicine. Participation is planned from the faculties in internal medicine, radiology, surgery, otology, physical medicine, and others. The course will cover poisoning—both environmental (industrial) and household (to some extent). Additional material to aid the part-time industrial physician will formulate the course.

As previously mentioned, relatively few physicians will become fully qualified specialists in occupational medicine and devote full time to this field. Over 90% of the general practitioners devote some time to occupational conditions; in fact, these physicians, rather than specialists, actually care for the majority of persons with industrially connected disabilities. With the trend toward decentralization of industry and with branch plants being located in smaller communities, the general practitioner is having increasing opportunities to practice industrial medicine. More physicians are serving as part-time plant physicians and are in charge of small industrial medical units. Further, the hazards of farming bring injuries which are entirely occupational in nature. The need for such short postgraduate courses is manifest.

Graduate Courses. The American Board of Preventive Medicine examines candidates for specialty certification in three subspecialties, one of which is occupational medicine. Requirements for admission to the examinations, beyond a medical degree and internship, include two years of full-time academic training in occupational medicine, toxicology, and industrial hygiene; a residency of one year in an approved medical department of an industry; and at least three years of practice limited to occupational medicine. With the basic preventive medicine courses, the physician qualifying for Board certification in occupational medicine is required to take specialized courses in this field. During the first year, instruction is given in the subjects of environmental physiology, industrial hygiene and health, radiation biology, industrial hygiene control, and accident prevention. For specialists in the field of occupational health, these subjects are essential. Electives are allowed progressively through the two academic years so that the student can acquaint himself more fully with specialized areas.

In connection with these graduate years, it is feasible to train physicians not only for careers in teaching and research, but for equally important careers as industrial medical clinicians. In training for this latter field, the facilities of a large medical center are of great advantage. Physicians are given training in the clinics and wards of University Hospital. In the second year, fully half of the time can be devoted to clinical subjects. During the summer, practical inplant instruction in industrial medical departments is afforded. Thus, it is felt that in these graduate years a solid groundwork of training in clinical industrial medicine is achieved.

The inplant residency year, directly supervised by the faculty, is reserved for physicians planning to qualify for certification by the American Board of Preventive Medicine. During this residency year which follows the two years of academic work, the physician rotates through various plant medical departments and clinics, actively participating in all facets of the clinical work.

Summary. From the early beginnings, when an occasional lecture to medical students constituted the entire curriculum, The University of Michigan Medical Center has developed a comprehensive postgraduate teaching program covering all phases of industrial health. Whether the student physician is interested ultimately in teaching, research, or clinical practice, he benefits from instruction by the faculties of several schools and departments. In the full two-year academic course, designed as part of the residency program to qualify physicians for examination and certification by the American Board of Preventive Medicine, the first year is largely at the School of Public Health while much of the second year is at University Hospital. The practice of occupational medicine requires skill and knowledge in many fields. Thus, a large medical center is ideal for this training. Integration of the many resources has been accomplished through the Institute of Industrial Health which has functioned since 1951. The staff members of the Institute, through academic appointments, participate actively in the teaching and provide guidance in administrative phases of the program.

While relatively few physicians restrict themselves solely to the practice of occupational medicine, some professional time and attention must, of necessity, be devoted to industrially connected disabilities. Thus, the full complete curriculum in industrial health effected by drawing generously on the knowledge and skills of many different specialists, in many areas of the Medical Center of the University of Michigan, will be appreciated by those cognizant of the importance of this relatively new field of specialization. (F. H. Shillito, Postgraduate Training in Occupational Medicine at The University of Michigan Medical Center: Postgraduate Medicine, 27: 46-50, January 1960)

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Occupational Medicine Course

One billet has been made available for one Medical officer to attend the eight weeks course in Occupational Medicine, Course #481, to be held 12 September through 4 November 1960 at the New York University Post-Graduate Medical School.

The course content covers: Preventive Medicine (including epidemiology and biostatistics), Administrative Medicine, Occupational Diseases, and Industrial Hygiene. It is aimed at meeting the need for specialized training in industrial medicine. Didactic instruction will be supplemented with field trips to industrial plants, governmental agencies concerned with industrial health, and union health centers. Opportunity will be given to attend medical, surgical, and clinical-pathological conferences held in the New York University-Bellevue Medical Center.

Those interested in applying for this course may submit an official request to the Chief, Bureau of Medicine and Surgery in accordance with instructions contained in BuMed Instruction 1520.8 of 6 February 1956. Requests should include the number of the course and be forwarded as soon as possible, attention Code 316.

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Smoking and Lung Cancer

An editorial in a recent issue of the Journal of the American Medical Association has apparently, and perhaps unwittingly, renewed the controversy on the relation of smoking to lung cancer that the Surgeon General of the United States Public Health Service tried to settle in an even earlier issue of the same periodical. Doctor Burney's report can be recommended as an excellent current review of the available facts on the matter. In addition, the New England Journal of Medicine would like to hazard a further comment, even though the facts and central issues have already been clouded by far too many unsolicited and unsubstantiated opinions.

It is over 20 years since Doctors H. Lombard and C. R. Doering first suggested an association between smoking and cancer. Since that time, there have been over two score similar studies, all of which have shown the same association and have progressively implicated excessive cigarette smoking. No responsible observer can deny this association, and the evidence is now sufficiently strong to suggest a causative role. In the face of this evidence, the response of the tobacco manufacturers and their spokesmen has been deplorable. They have distorted the facts beyond recognition. A bewildering array of paper tips has been added to their products, ostensibly to filter out harmful substances, the very existence of which they deny. They have been unwilling to follow the example of the distilling industry

which reaps profits while never denying, and occasionally calling attention to, the fact that excessive drinking leads to drunkenness.

It is true that much remains to be learned about the pathogenesis of lung cancer and that smoking is certainly not the only cause. Pulmonary neoplasms have not been produced in laboratory animals by cigarette smoke. Despite this, it may prove that observations on human beings will be as "definitive" as experiments on animals. Although the search should continue for a carcinogen in cigarette smoke, there is already sufficient evidence on hand to implicate smoking as the principal etiologic factor in the increased incidence of lung cancer, and lives can be saved if these facts are made known to the medical profession and to the smoking public.

It is not necessary to have precise information on etiology to prevent disease. Vaccination protected against smallpox more than one hundred years before the virus was identified, and the cholera vibrio was unsuspected at the time that John Snow had the foresight and courage to take the handle off the Broad Street pump.

Lives will continue to be lost if control measures must await definitive studies. Lives will be saved if physicians can now persuade their patients to stop smoking. (Smoking and Lung Cancer: New England J. Med., 262: 417, February 25, 1960)

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